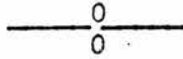


UNIVERSITY of EDINBURGH.



THE  
TREATMENT of PUERPERAL INSANITY  
by  
OVARIAN EXTRACT.

being a  
THESIS for the DEGREE of DOCTOR of MEDICINE.  
Presented by Edward A. Wilson, M.B. Ch.B.  
late Assistant Medical Officer.  
Dundee Mental Hospital.

Westgreen. DUNDEE.

MARCH. 1924.



## INTRODUCTION.

IN this thesis it is my aim and object to give an account of the use of various extracts of the Ovary in the wards of a general pauper Mental Hospital. The work was by no means confined to the class of case about which the thesis is written, but the results in this particular class were so striking that I thought it wise to limit my remarks to it.

I wish then to present the clinical notes of five cases, four with a history of gestation, and one without. There follows a commentary upon these cases, in which I submit various arguments and lines of thought bearing on the subject at large, and I have also included one or two NOTES which rather digress from the main theme. In dealing with the whole subject of the insanities of reproduction I wish to state that at times I have, for convenience, used the term " Puerperal Insanity " to include not only the condition strictly classified as such, but also the insanity of pregnancy and the insanity of Lactation.

I must place on record my indebtedness to Dr. W. T. Mackenzie, the Medical Superintendent of Westgreen Mental Hospital, for permission to record the cases under his surveillance and in his institution, and for the interest and support he afforded in the somewhat experimental line of work. I wish also to thank the two clinical assistants in the hospital, Messrs E.G. Mackie and G.A. Dunlop, both of St. Andrew's University, who assisted me in the clinical application and in the laboratory.

My thanks are due to the Librarian of the Royal College of Physicians, Edinburgh, for allowing me to consult books of reference there.

" REPRODUCTION entails a stress on the female sex from which the opposite sex is immune. There is, however, as a rule an adaptation of the general health of the parturient mother in the natural state which, with the hopeful anticipation in store, happily renders this period one less susceptible to a mental breakdown than is generally supposed. With the spread of civilisation, however, the troubles of childbirth increase, and many women become mentally disordered both before and after labour, and their attacks are mostly coloured by the physiological process which they are undergoing. There is no definite type of mental disorder which can be described as puerperal, but Acute Confusional Insanity is most usual.

It is estimated that about  $7\frac{1}{2}\%$  of insanity in women occurs in connexion with childbirth; viz. 1% during pregnancy, 5% after delivery, and  $1\frac{1}{2}\%$  during lactation.

Inheritance has its role in puerperal patients to the extent of 40% of cases and sometimes there is a history of previous attacks. It is rather more common in apprehensive primiparae after the age of thirty. Illegitimacy is a potent factor, as is also the desertion or loss of the husband. Prolonged labour is more likely to be a cause, by its exhausting effect, than easy delivery by forceps skilfully performed with, or without, an anaesthetic. About half the puerperal cases may be attributed to septic infection and auto-intoxication. Fright or shock also occurs in the history of some cases. Mental disorder may occur during pregnancy, within a short time of delivery, or during lactation.

THE INSANITY OF PREGNANCY may be an exaggeration of the morbid longings and caprices that often occur at this period. Moral perversion shows itself sometimes in untruthfulness and pilfering. It is associated with sleeplessness, morbid brooding, and depression, as seen in Maniacal-Depressive Insanity. Delusions frequently develop with aversion towards the husband, and the patient may become suicidal. Mental symptoms occurring before the third month of pregnancy are of better omen than those coming on in the later months. In the former case recovery frequently takes place in a few weeks, whereas in the latter instance the case generally continues and becomes one of puerperal insanity, but sometimes recovery takes place when the child is born. The induction of premature labour or abortion is usually not warranted, as definite mental improvement is not commonly occasioned thereby, but it may be necessary in certain cases where the patient's life is endangered. It would also appear sometimes to give a better chance for the life of the child.

" PUERPERAL INSANITY:- Acute Confusional rather than Maniacal-Depressive Insanity is what is most common, and Katatonic symptoms are sometimes present. Dementia Praecox, and even General Paralysis, have been known to appear during pregnancy or just after childbirth. A transitory delirium or an acute excitement sometimes also occurs at the time of delivery which passes off a few hours later; the patient may be delivered of her child in such a state and have no recollection thereof afterwards. In most cases, the first indications of a mental breakdown are manifested on the fourth or fifth day. It has frequently not been possible to keep the patient as quiet as usual after delivery. She becomes sleepless and fretful. She does not show natural affection for the child, the presence of her husband is a source of irritation to her, and she is indifferent to her other relations. She does not take her food so willingly, and begins to argue and quarrel with the nurse. She has spectres before her eyes or misinterprets noises that she hears. She becomes irritable and confused, her memory fails, and she develops morbid fears and apprehensions. The patient is flushed, and has an anxious look, and she has perhaps a slight rise of temperature, a rapid pulse, some headache, a dry tongue and a hot skin. The lochia may be normal or they may have stopped. The breasts may give trouble, and the secretion of milk gradually ceases. The bowels are costive, and the urine is sometimes albuminous. The patient becomes restless and impulsive and loses all self-control. Eroticism is frequently a marked feature. All food may be refused; the patient becomes incoherent and acutely excited, presenting a wild and unkempt appearance. Delusions are frequent but fleeting, while hallucinations are not uncommon. Very often the morbid ideas are of a religiously exalted character, and she imagines she is the Virgin Mary, or a persecutory type may prevail with hatred towards her husband. There is often change of identity, and she calls others by false names and loses all sense of orientation. Remissions sometimes occur, and her attention can be engaged for a time, only to relapse, until recovery takes place at the end of three to nine months. A few patients die of exhaustion, whilst others pass into a stage of automatic obedience, and become demented. Cases arising from three to six weeks after delivery are usually depressed, with delusions of unworthiness of a religious nature, and with tendencies to suicide.

" LACTATIONAL INSANITY:- This comprises mental disorder which develops from six weeks after confinement; it usually occurs in the later period of suckling of the child, and sometimes it follows soon after weaning. Prolonged lactation causes anaemia and

' exhaustion, and is commoner amongst the poorer classes than  
 ' in the well-to-do, and is no doubt prompted by the hope of  
 ' preventing early conception. The patient becomes restless  
 ' and sleepless, and if mental disorder supervenes, it is  
 ' generally of the nature of a subacute depressed form of  
 ' Confusional Insanity, with ideas of unworthiness. Delusions  
 ' are developed, which often affect the husband and child.  
 ' Sometimes all food is refused. There may be paroxysmal  
 ' excitement, and hallucinations may be present. The patient  
 ' looks pale and ill, and complains of various abnormal \*  
 ' sensations. There is a special tendency also to lung  
 ' complications.

'         **PROGNOSIS:-** Insanity in connexion with  
 ' childbirth is decidedly favourable in all three kinds.  
 ' About 75% of the cases recover. In a puerperal case, the  
 ' sooner the attack occurs after delivery, and the more  
 ' acute the symptoms, the better chance there is of complete  
 ' recovery. A certain proportion of cases, however, end  
 ' fatally, (10%), others become stuporous and some of these  
 ' eventuate in Dementia."

The above account of the insanities of Reproduction is  
 taken verbatim from COLE's MENTAL DISEASES. I give it in  
 order to show the clinical picture of this type of insanity  
 as given in the better known textbooks. The above description  
 may be taken as being fairly representative of the views of  
 many different authors on the subject.

Ref. 1.

## CASE A.

Mrs F. aet. 25, admitted to Westgreen Mental Hospital on 22nd June, 1922.

History:- In the beginning of January 1922 patient gave birth to her first child. She was admitted to the Eastern District Hospital in Glasgow on the 18th Jan. suffering from 'Acute Confusional Insanity.' She was described as being 'unable to feed herself, tears up bedclothes, and is generally destructive and unmanageable.'

On the 16th Feb. 1922 she was admitted to the Mental Hospital at Larbert. The following was her condition there.

'She was extremely noisy, confused, resistive, incoherent, and generally troublesome. Her habits were dirty, and she required much supervision. Since then she has slightly improved physically, though she is still in a poor condition as a result of her continuous restlessness. Mentally she remains confused, incoherent, disorientated as to time and place, dirty in her habits, and requiring constant attention. She does not recognise her own friends and seldom gives a satisfactory answer. Since she came here she has been kept in bed and requires a good deal of sedative to keep her moderately quiet.'

On her admission to Westgreen in the sixth month of her illness, her physical condition was as follows:-

Height:- 5ft. 1 $\frac{1}{2}$  ins.

Patient is very emaciated.

Weight:- Not obtained owing to her inability to stand but in a day or two it was 4st. 9lbs. There were no injuries. Tongue furred and tremulous. The pulse was 100 and was thready. There was evidence of old involvement of the right lung. Her General Physical Condition was described as exceedingly poor.

*Temp. not stated  
non leucocytosis*

## Clinical History.

- 25-6-22. Wild and hysterical. Weeps and shouts alternately and struggles with nurses.
- 18-7-22. Very restless lately. Almost acutely maniacal.
- 7-8-22. Physical state improved. Sleeps and eats better. Very silly still.
- 9-9-22. Much improved. Began to knit to-day. Mentally is changeable but not so obstreperous.
- 12-10-22. Patient up. Stood it well. Is up daily.
- 15-11-22. Became worse during past month. Lost sleep and was very restless, Trional gr XXX per diem. In bed.
- 30-1-23. Patient shows no sign of improvement. She sometime sings a song more or less accurately and can exchange repartee with other patients, but is quite incoherent at other times.
- 28-3-23. Still restless.



- 15-5-23. Weight regained but mentally no change. Hyoscine Hydrobrom. gr 1/100 was the only drug which could ensure sleep and which soothed the restlessness and the strain.
- 28-8-23. Ovarian Extract whole gland given. The Parke Davis product was used in the form of 1c.c. ampoule, and given hypodermically in the arm. For six hours afterwards there was distinct excitement followed by sleep and a general quietening down of restlessness. There was no rise of temperature and there was no albumen in the urine. During the following week distinct improvement was seen in the attitude of the patient. Another injection was given on the 1st Sept. and again on the 9th and 13th. The patient was by now greatly improved. The restlessness was gone, she enjoyed sound sleep, she had a good appetite, and mentally she became rational, coherent, orientated and social.
- 20-9-23. Injection of ovarian extract was continued on the 20th and 26th Sept. and on the 4th, 13th, of Oct. By now the patient was up and going about, rational, interested in her surroundings, doing useful work in the ward, and she mixed with the other patients and asked for her husband and child. She was sent up to the sewing room and there became one of the most dependable of the workers. She became the centre of a little coterie of women, all attracted to her by her sweetness of disposition. Injections were discontinued, she remained perfectly well and was discharged on the 15th of Dec.
- 15-12-23. Patient maintains her health. She is now resident in Glasgow where she is undertaking the burden of household duties with her husband and child.
- 5-3-24.

*physical improvement  
noted but  
height up.*

# RECORD of WEIGHT WHILE patient was at Westgreen.

1922. June:- 4st. 12 lbs.  
July:- 5st. 2 lbs.  
Aug.:- 5st. 11lbs.  
Sept:- 6st. 2 lbs.  
Oct.:- 6st. 4lbs.  
Nov.:- 6st. 7 lbs.  
Dec.:- 6st. 7 lbs.

1923. Jan.:- 6st. 7lbs.  
Feb.:- 6st. 8lbs.  
Mar.:- 6st. 3lbs.  
April:- 5st. 9lbs.  
May:- 6st. 2lbs.  
June:- 6st. 7lbs.  
July:- 6st. 9lbs.  
Aug.:- 7st. 7lbs.

Sept.  
1923. 7st. 12lbs.  
Oct:- 8st. 2lbs.  
Nov:- 8st. 4lbs.

*If the weight was taken  
on the 1st of the month -  
note that in 2 months previous  
to 1st Sept patient had gained  
over 2 stones in weight.*

**FAMILY HISTORY:-** The father was addicted to alcohol. He was admitted to Westgreen in March 1914 suffering from mania with grandiose delusions, and died twenty days afterwards from exhaustion from Acute Mania. There was no post-mortem and a suggested diagnosis of G.P.I. was entered on his case-sheet. Mother is still alive but has been bedridden for four years through some rheumatic complaint.

**PREVIOUS HISTORY:-** After her recovery patient was able to tell the following facts concerning her previous life:-

She remembered her school days; she brought up here the memory of a bad fall she had down the stairs at school. Father was cruel to her mother and she always clung to her mother more. She had known her husband for many years, she remembered the Armistice and eventually she became pregnant, marriage following pregnancy and was entered into without her mother's knowledge. This is interesting from the point of view of finding the reason of her breakdown in a psychical basis. Her husband is attached to her. He is a man of some education, is a member of the Pharmaceutical Society, and has a job as assistant in a chemist's establishment.



## NOTE

on Case A.

This patient is a typical case of Puerperal Insanity. The breakdown occurred within ten days of delivery, was acute confusional in type, and remained so. I wish to emphasize the long duration of the mania. There was a clear interval of over 19 months between the onset of the symptoms and the commencement of ovarian medication. In this respect this case is distinctly beyond the period when recovery spontaneously may be looked for.<sup>3</sup> I am willing to grant the possibility of a spontaneous recovery coinciding with the administration of the hypodermics but I think that in the circumstances, I am justified in maintaining that the improvement shown was directly due to the therapeutic effect of the ovarian extract.

*mania is  
quite different  
from  
impulsive  
insanity*

With regard to the onset of menstruation in this case I regret that I cannot give the exact date of the first menstrual flow. This case was the first case that I treated and I was not alive to the importance of having an accurate record of menstruation. But this I will say: that during these 19 months she did not menstruate and in Nov. 1923, when she was working in the sewing room of the hospital, she undoubtedly did menstruate, that is within three months of the beginning of the treatment. She had eight injections in all, spread over 46 days.

I would direct attention to the accompanying letter, which was one written to me at my request while she was still in hospital. It is the letter of a fairly well educated, healthy woman, shows good composition, grammar, and spelling, while the writing is legible and co-ordinated.

As I write, (wp 20-3-24) I have before me a letter from her husband dated 7-3-24. saying that " she suffers from headaches, sickly feelings, and I believe, nervousness. She enjoyed good health until about three weeks ago. She menstruated last from 20th to 24th Jan.<sup>3</sup> I am inclined to fear this is due to pregnancy. "

24/11/23.

Dear Sir,

I hardly know what to write, I have but a faint remembrance, as to the commencement of my illness, but I will try to tell you a little, of how I felt, before I was so bad. I was <sup>in</sup> Glasgow; away from home when I became <sup>(pregnant)</sup> ill, and the strain on my nerves with worrying made it harder for me during my illness. I used to take severe headaches, and the pains ~~that~~ I had always at nights was terrible. I began to feel I would never get over it. Then when I did lie down I absolutely gave up all hopes of recovering. I wrote my mother a letter telling her I did not expect to get better, which must have put her in a state. I told my Chum to keep it until after my baby was born. After my baby came for a time I lay in a very weak condition. but I felt no pain. my husband gave me a book to read him a little bit of a story he said. I managed for a time, then I felt my eyes grow dim, and before I was half finished, I could see no more. the words seemed to dance before me. I got weaker every day. and felt I was going to die, of course I was able to attend to my baby for a time, two weeks I think, before I really felt so bad. After that I had what you would call delusions. to me it seemed so real. I was lying in my coffin and not able to speak. I imagined that they had put me in while I was very bad and when I opened my eyes I found I was all alone in the room. I felt as if I was bound. for I could not

move. I heard the moving about of chairs in the next room. and the clatter of cups &c and I knew they had just finished tea. I do not remember anything more. I must have lost consciousness. and been taken away in that condition for when I woke up again I was in the Hospital. at Larchmont I suppose. I remember having one or two visits and recognised my friends. All the time I was ill I never could remember of seeing my husband. the only time was when I came to Westgreen. I remember seeing him the first time I knew him in the waiting <sup>room</sup>. I was put in a side ward in a nice room when I went to Larchmont. and I thought they strapped me to the bed. I believe I was in the Hospital ward also as I remember distinctly of seeing a parrot in a cage in the middle of the room where was also the fire and chairs all round it. Then I was brought here. I remember part of the journey as we past the place of my birth and I remember my friends telling me to look out of the window while we were passing it. when I was in the sick room I felt very happy despite my condition and felt that after all I was going to get better. still I felt far from well. but thanks to the kind nursing I received while here. It has really saved my life as well as clearing my mind. I am very grateful to all those who had the care of me they must have had a terrible time. for I could never stay in my bed. and must have caused some trouble. now I am living in the hopes of being home once more to enjoy the company of my friends. I must thank you very much

Doctor for your kind attention to me, and I am thankful for the new treatment you gave me. I am sure it helped me very much. I hope you will do very well in your work.

I am yours respectfully

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## CASE B.

Patient was admitted to the Mental Hospital, Westgreen, on the 20th August 1923. She was unmarried, a shifter to trade, ( in a jute mill.) and Roman Catholic. She was then 22 years of age.

History:- Her child was born on the eighth of June, 1923. From her own statement after recovery we learn that pregnancy was normal. About the tenth day after birth she became excited and according to her own story she had fits. The next description of her condition comes from her Medical Certificates which I quote verbatim.

(1). Patient behaves in a silly manner, is incoherent in speech, usually talking nonsense. She says she was admitted in 1838, is married to Julius Caesar, and Dick Turpin is her sweetheart.

The nurse in charge says she is constantly talking, is noisy, singing, shouting, using filthy language at times and that she is dirty in her habits.

(2). Patient is constantly talking, singing and shouting, speech is incoherent, says she was a dancer in the City Hall six weeks ago - which is untrue.

The nurse in charge says she is always behaving in a silly manner and making grimaces; often getting up out of bed, and sometimes attacking anyone who comes near her.

Physical Condition on Admission:- Nourishment fairly good.

Height:- 5 ft.  $1\frac{1}{2}$  ins. Weight:- 7 st. 11 lb. There is sugar in the urine. The knee reflex was exaggerated.

Psychical Condition on Admission:- Patient was excited and talkative. She sang and was hilarious. There was a good deal of inane laughter. She rolled her eyes and grinned continually.

23-8-23. She sleeps and eats well.

29-8-23. An injection of Ovarian Extract given. It was followed by restlessness.

9-9-23. Tablets of Corpus Luteum corresponding to 12 grains of the desiccated substance given daily and continued until the end of November.

She menstruated in October. By then she was up and going about and improving.

29-10-23. At the end of October there was a marked change in her mental condition. She was more rational and was willing to talk about herself. She answered questions intelligently, worked in the ward and was useful. She was discharged home in the middle of December.

FAMILY HISTORY:-The mother was admitted to Westgreen in Jan. 1919 suffering from a condition alleged to have been brought on by alcohol. She is still practically the same, in a maniacal confusional state.

The father is well and pursues the trade of a shoemaker.

An elder sister was admitted to Westgreen in May 1921 aet. 25. She was sent from the Dundee Royal Infirmary suffering from Acute Confusional Insanity coming on ten days after the birth of her first child. For notes see below.

There is another sister older yet who is married and has two of a family. She has had no trouble with her pregnancies.

After her recovery patient gave the following information. She is unmarried. Up to her illness she never had a doctor in her life. She is attached to the father of the child but the difficulty in their relationship appears to be religious. He is Protestant and she is R.C. He was out of a job when the child was born. No correspondence now passes between them. She says she worried very much about her condition.

#### Clinical Notes on Mrs. K. the sister of the above case.

On admission:- She was admitted under the following certificates

(1). She is facile, mixed in conversation. She is going to die to-night, and she is restless and sleepless. She gets beyond control.

(2). She is incoherent in speech, ideas are confused, she is very restless, full of fears regarding herself, she appears unable to sleep.

The Nurse in charge of the Maternity Ward, D.R.I. informs me that the patient has to be tied in bed. She gets up and jumps about the floor and requires supervision.

On Examination she was found to have a torn perineum, three stitches, and the lochia were excessive and foetid. She was very restless and required paraldehyde daily. Douching the vagina regularly was done. Acute mastitis developed. She wouldn't keep on the bandages and was dirty in her habits.

14-6-21. Abscess drained under anaesthetic.

15-9-21. Improved. Talks in rational manner.

8-10-21. Sent out. On trial.

5-11-21. Discharged.

Note:- This patient had a good recovery. At the time of writing she is again pregnant - eighth month - and is so far quite well.



## NOTE

on the above case.<sup>3</sup>

This woman is a typical case of puerperal insanity. She had a nine weeks history of mental trouble when she came into hospital. Her improvement dated from the first week of the ovarian medication in this case done by a preliminary injection, and later by tablets of corpus luteum. I would point out that her recovery might have corresponded with a spontaneous recovery; symptoms of improvement were to be expected from a comparison with other cases. We read in the textbooks that from the third to the ninth month cases usually undergo spontaneous recovery.<sup>3</sup> I would submit that, taken in conjunction with the other cases of the series,<sup>3</sup> the improvement was directly due to the ovarian medication.<sup>3</sup>

At the time of writing, (March 15.) the patient remains perfectly well. She is menstruating regularly. She is keeping house for her father and there are three others at home.



## CASE C.

Patient was admitted to Westgreen Mental Hospital on 15th Oct. 1923. She was then aged 24, and was married.

## MEDICAL CERTIFICATES.

(1). Patient lies in a stuporose condition with saliva trickling from her mouth, staring into vacancy and paying no heed to questions or other stimuli; at other times she smiles without apparent cause.

The charge Nurse reports that patient is dirty in her habits.

(2). The patient is stupid and confused, and takes no interest in her surroundings.

The Charge Nurse reports that patient takes no interest in things and that she sometimes giggles and cries.

HISTORY:- The first sign of mental breakdown was seen in May 1923 after the birth of her first child. She became very quiet. She was described as being of sober normal habits and there is no family history of insanity.

PHYSICAL CONDITION on ADMISSION:- She is fairly well nourished. The skin is moist and the saliva drools from her mouth. The mouth is very wet and there are some carious teeth. The pulse is of poor force and is irregular. The pupils react well. She has hyper-extension of the phalanges.

Weight:- 9 st.

Height:- 5 ft.  $3\frac{1}{2}$  ins.

PSYCHICAL CONDITION on ADMISSION:- Patient was in a dazed condition and was exactly as her certificates described her.

CLINICAL HISTORY:- She was kept in bed under observation for a week and during this time there was no change whatsoever. Injection of Ovarian Extract was given on the 22nd October, followed by one on the 31st, and on the following dates:- Nov. 7th, 15th, 20th, 29th, and Dec. 5th and 15th. The first visible effect was the stoppage of the drooling of the saliva. This occurred within three days and gave rise to comment. She remained quiet all through and there was no sign of restlessness. Improvement was noted, which shortly became marked. In November she was up and helping in the ward, she was sent to the Hall for her meals along with the other patients, she became social, she greeted one with a smile and was able to tell us about herself. A very interesting thing about this case was her increase of weight. She rapidly put on weight and was quite stout when she was discharged as recovered on the 12th of January 1924.

## NOTE on the case described above.

This case was of a different type to the usual. Instead of acute confusional insanity there was rather the opposite extreme. She had a five months history of mental trouble when she came under treatment by ovarian extract. After the preliminary week of observation during which there was no change at all, the general and rapid improvement which took place after its administration was all the more remarkable. I must admit that the time was such that in the usual course of events one could look for improvement because statistics show that spontaneous recovery can be expected up to the sixth or ninth month. I am prepared to grant that the administration of the ovarian extract could have coincided with her hoped for recovery. But I would submit that the case taken in conjunction with the other cases in my series adds weight to the view that the responsible factor in her betterment was the specific line of treatment adopted.

Eight injections were given in all spread over 54 days. She was menstruating while in the Hospital though I cannot give dates. She enjoyed good health when inquiries were made in the beginning of March.

## CASE D.

Mrs S. aet. 40, was admitted to Westgreen on the 8th June 1923.

## MEDICAL CERTIFICATES.

- (1). Patient is excited, shouting, singing, talking nonsense, with many repetitions and changing associations, showing flight of ideas.  
Charge Nurse reports that the patient is sleepless, restless, talkative, and has to be fed.
- (2). Patient is raving and shouting and showing no sign of intelligence.  
The Charge Nurse reports that the patient talks nonsense incessantly, is sometimes violent and has to be fed.

PREVIOUS HISTORY:- Patient was in Montrose Asylum from Nov. 1918 to Sept. 1919. There is no information of her condition while there. The birth of her child, which was not her first, took place two years ago, i.e. in summer 1921. She has well-marked striae gravidarum. Since then she has never been well, but no actual mental breakdown occurred until five months afterwards, when I am told that she became restless and lost control of herself although she was never sent to a Mental Hospital. Through time she got better but she broke down again in the summer of 1923.

PHYSICAL CONDITION on ADMISSION:- She is of average development, pale and anaemic. The pulse is weak and regular. The heart sounds suggest a degree of myocardial degeneration. She is a mouth breather. Teeth dirty and pyorrhoea alveolaris is present. The pupils react sluggishly, and the knee jerks are poor. There is nothing abnormal in the urine.  
Weight:- 7 stones. Height:- 5 feet.

PSYCHICAL CONDITION on ADMISSION:- Patient is restless, agitated, almost violent at times. Incoherent, talking without sense on general subjects.

- 13-6-23 :- She is still restless, sleepless, feeds poorly. Extra diet given and cod liver oil and malt plus a general tonic. Soporifics to control the insomnia.
- 19-6-23 :- The mammae are lactating.
- 15-7-23 :- Still incoherent. Gets out of bed and struggles.
- 30-7-23 :- No change.
- 14-8-23 :- Putting on weight.
- 29-8-23 :- Ovarian Extract given hypodermically.
- 2-9-23 :- A vaginal discharge reported by the nursing staff. On vaginal examination the cervix was found to be

soft and friable. Antiseptic douches were given though I would have liked to have explored the uterus and done a curettage if necessary. The discharge cleared up under the treatment.

Ovarian Extract was given on the following dates.

August 29.

September 1. 9. 13. 19. 26.

October 4. 14. 31.

November 7. 14. 20. 29.

Oedema of ankles was noticed on Sept. 10th, but it quickly disappeared. There was no albumen in the urine. Two days later there was distinct oedema of the tissue round the eyes, which also quickly disappeared.

Generally she improved very much during this period. She became quieter and eventually was got up out of bed and she made herself useful in the ward. She put on weight but never lost her pallor and anaemic look. She maintained her improvement during December and January, and was discharged on 26-1-24.

## NOTE

on the above case.

I have included this case in my series because it is the only one I have which is of the Lactational type of Puerperal Insanity. It is unsatisfactory from the point of view of the history and incomplete information.

The woman was aged 40 on admission. She was a multipara but the history was of the last labour being two years before. Now there was undoubtedly milk in her breasts within a short time of her coming to Westgreen and I must say that it is probable that she had a subsequent pregnancy which was probably terminated by abortion leaving the uterine condition as we found it and at the same time sufficiently far advanced to cause the mammae to lactate.

Certainly there was room for all these things to happen without our knowledge because the difficulty of obtaining accurate information was very great in this woman's case.

She had 13 injections in all spread over 23 days. The improvement was evidenced more slowly in this case but it was quite definite. Her mental condition when she was sent out was that of a woman of average intelligence, quiet and somewhat reserved in manner. Her menstrual periods had begun again before she was discharged.

## CASE E.

Patient was admitted to Westgreen on the 3rd of Dec. 1922.  
She was single, and aged 32.

## MEDICAL CERTIFICATES.

- (1). She is in an atonic condition, shaking and nodding her head only and not always coherently to simple questions.  
Her brother tells me she has been previously twice in Asylum treatment and that she has been wandering.
- (2). She does not speak and the only intelligence she shows is by nodding her head. She is depressed, in tears, and strange in look and manner.  
She has been twice in an Asylum and the Police state that she has been found wandering during the night.

PREVIOUS HISTORY:- She was in Montrose Asylum at the age of 17 in the year 1907 and again in 1914 at the age of 24 for six to nine months each time.

FAMILY HISTORY:- Father died 73, Mother 69, both of natural causes. Cases on the mother's side are believed to have died in Montrose Asylum. The patient had no settled home, and this worried her.

PHYSICAL CONDITION on ADMISSION:- The patient is restless and flushed. The pulse is irregular and suggests auricular fibrillation. The chest wall is poorly clad. The pupils do not react at all and are dilated. No abdominal reflex. No knee jerks. No response to plantar stimulation. There are no marks of injury.

Weight:- 7 st. 3 lbs. Height:- 5 ft.  $3\frac{1}{2}$  ins.

PSYCHICAL CONDITION:- On admission this rather belied her certificates. She was excited, unruly, restless, and in condition resembled a chronic mania with at times acute exacerbations.

CLINICAL HISTORY:- 5-12-22. Troublesome, continually getting out of bed, and although not striking out, very resistive to being led back to bed.

16-12-22. Continually restless even under the administration of trional and paraldehyde. She refused to take her food, and to-day was tube fed. She is very strong for such a frame.

30-12-22. Tube-feeding stopped. She is quieter.

20-1-23. Occasionally emits a coeee. Stands on bed jumping up and down varying the programme by running over rows of beds, hurdling over beds and chairs.

20-3-23. No change.

20-7-23. No change mentally. Physically she is downhill.  
See record of weight given below.

28-8-23. Ovarian Extract given in the arm hypodermically. The effect was interesting. This patient who was always troubled with insomnia and great restlessness, slept continuously for 30 hours, not eating through that period. Her daily dose of Trional gr XV was stopped on the following day and further injections were given on the 1st, 9th, 13th, 19th, and 26th Sept. The patient menstruated on the 4th Sept, the first since her admission to hospital. Another injection on the 4th October, and Thyreoid Extract gr V thrice daily on the 6th, followed by further injections on the 13th, 22nd, and 31st Oct. and the 4th and 7th November. No further administration of Ovarian Extract was done. The general condition of the patient during this period was much improved. See record of weight. The remarkable soporific effect of the first hypodermic was not repeated in the others although the general effect was undoubtedly the abolition of her restlessness and her insomnia. I should mention here that during the summer she had been given periodically hyoscine hypodermically and even that drug sometimes did not procure sleep.

PSYCHICALLY there was a change. She sat up and looked around, took her food with increased appetite, and eventually was got up and sent to the main Hall to take her meals with the other patients. She became social, and gave an answer rationally, while she was able to remember a few details of her former life, her work, her address and how she liked the job. She is a laundrymaid. The next step was sending her to the Asylum laundry. She did well there but at her own request she worked only half a day, spending the afternoons in one of the day wards.

She was discharged into the care of a relative in the middle of February and is still there. She makes herself useful in the household work. From my observation she normally is not a woman of any great mental power nor indeed is her sister. She probably would find difficulty in maintaining herself alone in the world.

#### RECORD of WEIGHT. 1923.

|                    |                     |                      |
|--------------------|---------------------|----------------------|
| Jan:- Too excited. | May:- 7 st. 2 lbs.  | Aug:- 6 st. 7 lbs.   |
| Feb:- 7 st. 5 lbs. | June:- 6 st. 8 lbs. | Sept:- 6 st. 10 lbs. |
| Mar:- 7 st. 2 lbs. | July:- 6 st. 7 lbs. | Oct:- 7 st. 2 lbs.   |
| April:- 7 st.      |                     | Nov:- 8 st.          |



## NOTE

on the foregoing case.

THIS woman is not a case of puerperal insanity. I have tried to elicit her previous history but failed to find any evidence of pregnancy or even abortion. She has no striae gravidarum.

My reason for including this case is that I wish to emphasize that puerperal insanity is not to be regarded as a distinct clinical entity, but it is rather to be correlated with other conditions in women connected with the reproductive functions. I will deal with this point more fully later on.

13 injections in all were given in this case. Special note should be taken of the speedy onset of menstruation after the first injection and with that her improvement became general, not only mentally but physically. I have only just learned that at the previous breakdowns there was stoppage of menstruation and that improvement was synchronous with the reappearance of menstruation.

C O M M E N T A R Y .

THE PREPARATION used in the treatment of these cases was the product manufactured by Messrs Parke Davis and Co. It was obtained through a wholesale chemist in a routine manner and was of standard strength. The following description of the firm's method of preparing the extract is taken verbatim from their book on endocrine products:- Ref. 2.

" In employing ovarian products in therapeutics we have three kinds of preparations to choose from, and each has certain special indications. There is a preparation made from the whole gland, which is called Ovarian Substance, and is supplied in tablets, also in soluble extract form for hypodermic injection; another is pure Corpus Luteum, which is supplied in powder, capsules, tablets, and in soluble extract form for hypodermic injection; and a third, made from the ovary after ablation of the corpus luteum, is called Ovarian Residue, and is available in powder, in capsules, and in soluble extract form for hypodermic injection.

For use in medicine, the entire ovaries from cattle are freed from fat, dried at a low temperature and then powdered. The powder is made up into tablets containing 5 grains (0.325 gm.), which are chocolate coated. A fluid containing the soluble principles of the gland is also prepared from the powder, and is supplied in ampoules containing 1 c.c. "

We are not told how the fat is removed, nor in what medium the soluble principles of the gland are dissolved. Other details which would be interesting to know are the age and type of cattle used for the source of the ovaries. It is the practise of some farmers to fatten off their cows just when they attain to maturity, and others keep them for years for breeding and dairy purposes. I presume that it is from these animals which reach the large slaughter houses for butcher purposes that the ovaries are taken. In the cattle ranches round Detroit younger animals would probably be found and consequently ovaries in full function would be obtained. The glands of swine and sheep are also taken for purposes of manufacture and indeed the finished preparation probably represents a composite cow-pig-sheep gland.

There are many firms who manufacture endocrine products and each has their own method of preparation. Some for example take a watery extract after drying and dessication, others take an alcoholic extract, and so on. The point I wish to make is that there is no standardisation and that the physician very often does not know what he is dealing with.

Let me illustrate this point in another way.<sup>3</sup> The catalogue of Messrs Parke Davis announces that each tablet of their ovarian substance contains the extract from thirty grains of fresh gland. The catalogue of Messrs Burroughs Wellcome says that each tablet of their ovarian substance contains the extract from five grains of fresh gland. Other catalogues show gradations between these two while other firms again do not give any information at all regarding the amount of fresh gland.

Now the laws governing dosage ought to apply with equal force in the case of the ovary as in the case of say the thyroid. The discrepancy shown above is in the ratio of 6 to 1. Therefore logically the Parke Davis preparation had six times more chance of therapeutic action than its neighbour the Burroughs-Wellcome preparation. Is not this another way to explain the variegated results recorded in the history of ovarian medication, and does it not impel us to preserve an open mind with regard to future developments in the use of this substance.

There is also of course the skill and integrity of those set apart to collect the glands in the slaughter house. The ovary is not easily separated from the tissue immediately surrounding it and there is bound to be a percentage of useless material included in the stock. I may be unjust to the skill of the men employed in the work but I mention it as a possible source of error.

#### THE CLINICAL APPLICATION OF OVARIAN EXTRACT.

The first point I would deal with under this heading is the form in which the drug is to be given to the body. I determined to follow Mother NATURE as closely as possible and decided on the hypodermic method as it allowed the extract to go straight into the blood. I am aware that my policy here is one the wisdom of which can be challenged; that other internal secretions are capable of action after absorption from the alimentary tract; that the oral method of administering the drug is much more convenient. But in an Institution it is easier to resort to the hypodermic method than it is in general practice.

In giving the hypodermic injection the arm was usually taken as being the most convenient, and due precautions to ensure asepsis were taken. And here I would lay stress on the importance of keeping the name and nature of the 'mittel' from the patient's ken. One may argue that the patient is not in a fit state to receive any impressions regarding her medicine and that even if she knew it would make no difference. Be that as it may I took special precautions to prevent the patients knowing what they were getting and I can say definitely that in the above series of cases not one of them knew that there was any special content in the hypodermic which they received. They had all got injections hypodermically previously of drugs like hyoscine hydrobromide etc.

The next point to decide was the rate of dosage. Some writers recommend the giving of the tablets daily, others the interrupted period. There was no data available for the administration of the hypodermic ampoule in the type of case we are concerned with. I therefore gave an injection tentatively to see what effect it would have, and at the same time I kept an accurate 4 hourly chart for 24 hours and the regular 12 hour chart every day. I soon decided on the weekly injection, or at any rate a time not less than four days was allowed to elapse before the next injection.

*Where are these charts?*

Oedema of the ankles and eyelids was seen in a few instances but it did not seem to be important as it did not return on subsequent injections. In two cases there was a well-marked reaction locally after the hypo was given. This was seen on each injection and probably was due to a specific protein sensitisation. It took the form of a reddening for half an inch round the area of injection, and cleared up only after several days.

Simultaneously with the ovarian treatment the routine general treatment on orthodox lines was carried out. The patient was put on a special diet which being interpreted in a pauper asylum meant three eggs daily in different forms, milk puddings, cod liver oil and malt etc. The question of sleep solved itself.

The urine was examined as a routine in those cases who were having the extract of ovary. In one or two specimens albumen was found and attention was directed to the possibility of the injection having caused it. But there was no such relationship speaking generally.

THE onset of menstruation was a direct result of the giving of Ovarian Extract. In the first case where there was a history of 19 months mania since the confinement no menstrual flow had occurred during all that time.<sup>3</sup> Within a short time menstruation returned and has remained regular up to within a short time of writing. The same phenomenon was seen in the case of all the others in the series and also in other cases treated simultaneously in which there was no history of a pregnancy. In fact the improvement which was seen coincided with the return of menstruation. It is not good to be dogmatic in the laying down of rules in such a subject as the one before us, but it would seem that a most important point in the treatment of puerperal cases is the return of menstruation. One might formulate the rule:- Get the patient to menstruate and her mental recovery will assuredly synchronise. This is very interesting because, as has been shown by Fraenkel and other writers the ovary or more specifically the corpus luteum 'controls the nutrition of the uterus from puberty till the menopause, prevents it from lapsing into the infantile condition or undergoing atrophy, and prepares its mucous membrane for the maintenance of the ovum,'. Now, if the strain of pregnancy temporarily abrogates this function then it is quite logical to treat it by supplementing the action of the ovary by artificial means.

Ref. 3.

The fact that the return of menstruation is at least synchronous with the mental recovery or vice versa, directs attention to the purely psychical standpoint. Can it not be that the knowledge that she is not menstruating is responsible for her condition, or if not the primary cause, a secondary one which prevents her breaking the vicious circle? Elsewhere I have already dealt with the psychical point of view in general, but I would draw attention to it again here because though the root cause of the breakdown may be physiological occurring within a few days of labour, there may be a strong psychical conflict superimposed upon it much later.

WHEN the effect of the treatment in these cases is considered, one is immediately struck by the rapid abolition of the restlessness and the insomnia. This was marked in Case A, but was also present in Case D and in Case E where the direct effect of the injection was very marked. It was just as if a very strong dose of Hyoscine had been given. To eliminate the argument that this result could have been due to suggestion, I may state that 1/100 grain of hyoscine hydrobromide produced only a few hours sleep, certainly not more than five, and that such hypodermics had been given regularly beforehand.

In the type of case where depression and melancholy were marked, the injection did not make it worse. It on the contrary abolished the melancholy and brought back the normal state. It seemed as if the ovarian extract supplied a deficiency which in the one case had caused mania and in the other had caused melancholia.

The general hypothesis I formed from the observation of these cases was that there was such a deficiency. At least it was a working hypothesis though what exactly it means I cannot say definitely. Whether it is the internal secretion of the corpus luteum which is absent or an internal secretion derived from the interstitial cells in the remainder of the ovary, or both, I am not prepared to say. In Case B I got a good result by giving corpus luteum after an initial dose of whole gland. That would point to the corpus luteum being the active principle, particularly as the remainder were treated with whole gland extract, and would presumably contain the supposed specific corpus luteum hormone.

Can an endocrine product exert this profound influence on the mental condition of a patient? Is there any parallel for it?

In answer to that question I would point out the effect of the internal secretion of the thyroid gland. In the child a deficiency here produces a derangement of the mentality not one whit less grave than in the cases under review. Not only that but the administration of the deficient internal secretion in the form of thyroid extract produces a betterment not one whit less remarkable. I refer to the condition of cretinism. The same is true of the analogous condition in the adult, i.e. myxoedema. At the same time I would point out that the thyroid and the ovary are closely connected in their functions, and also would refer to my paragraph calling attention to the change in the vasomotor system of these patients and the effect on metabolism generally.



I would answer my own question in the affirmative. We have enough knowledge of the internal secretions to know that they play a very important part in the economy of the body. With the evidence of these cases I would submit that artificial injection of the ovarian internal secretion can have this powerful effect on the mentality of the patient. That indeed has long been known as the disturbances of puberty, of menstruation, and of the menopause have long been treated by the giving of the substance of the ovary.

WHAT is the action of this substance on the central nervous system, and through it on MIND as we know it. Take a case like the first in the series. She is to all intents and purposes intellectually dead. She is intolerably restless and sleepless, incoherent at times and irrational. She reacts to the injection of something out of a bottle into her arm. She becomes herself again, she is well, she returns to her home and assumes responsibilities. What has happened? Has the central nervous system broken down in function because it is deprived of a specific internal secretion supplied to its cells through the blood? And has it broken down to such an extent that we have the clinical picture of the acute Confusional Insanity of Childbirth? From the physical point of view we have a profound disturbance in the function of nearly every system. The nervous system, the vasomotor system, the circulatory system, and the alimentary system, are all affected. From the psychical point of view there is great restlessness, insomnia and a feeling of great strain. The strain is so great that the patient is driven to do things which when well she would never think of doing. Anything which occurs to the mind is acted on. I have watched a patient sing snatches of a song, and, hearing an oath from the other side of the ward, immediately burst out into a stream of language in retaliation. One impression fixed itself in my mind. It was as if the expression on the face of the patient betokened the possession of a great secret. It was just as if the mind of the sufferer said, "Here am I. I have broken down because I have brought a new life into the world and the power of betterment is beyond me." These are highly speculative thoughts and probably not very scientific. But they directed my inquiry to the question of whether this psychical upheaval could not be explained on a purely psychical basis. And more, if it were purely a psychical process, could it not be dealt with from a purely psychical point of view, for example by the method of Psycho-Analysis.

NOW I have had some experience of Psychoanalysis because I was personally analysed in Vienna by a pupil of Professor Freud. I have not got much experience of its therapeutic application but I know enough to say definitely that it would be quite impossible to analyse such a

patient as say Case A. The coherence simply was not there. Associations were fleeting and the power of establishing a transferred fixation on to the Ego of the analyst was absent.

There may be an explanation of the condition on purely psychical grounds ; indeed at first sight the theory is at least tenable. One has only to recollect the experience the woman has gone through to realise that. The strains on the MIND of pregnancy and subsequent childbirth are great and are indeed associated with a certain amount of neurotic manifestation in most women. But consider the acute onset of the condition ; the complete absence of any method in the madness and the absence of any definite group of ideas such as obtain in paranoia. These things are against any underlying purely psychical reason. And I do not see how one could get at any complex or bring up any memory in the state in which the patient is. It might be done after the recovery when the technique of Psycho-Analysis could be applied. But as a method of treatment I do not see how the problem could be approached from a purely Psycho-Analytical point of view.

Consider also the success of the injections of ovarian extract. That would rather point to the root cause being physiological. And it is this question of the relationship of the ovarian hormone to the MIND which is so interesting. There is a certain amount of disturbance mentally in the menopause, whether natural or artificial. That would point to the necessity of a healthy ovary before the menopause and to a mechanism of readjustment whenever its functions are attenuated. I do not wish to dissociate the phenomena of mental disturbance at either of these two periods from the mental phenomena seen in connection with childbirth. Rather would I correlate them and say that the problem of the Insanities of Childbirth is not to be regarded as a separate clinical entity, but it has to be studied definitely in connection with these other disorders, the mental phenomena associated with puberty, menstruation, and the menopause. It is for that reason that I have included in my series of cases the clinical notes of a case of mental breakdown occurring in a woman of thirty who has had no pregnancy.

Is it not possible that the same strain and the same breakdown which occurs in pregnancy or the puerperium could occur in women who are not pregnant?

On the face of it the suggestion is not an impossible one. Malnutrition, bad social conditions, bad working conditions, could they not play some rôle in the causation of an endocrine breakdown leading to the production of an Acute Confusional Insanity exactly similar to Puerperal Insanity but differing from it only in the cause of the initial breakdown of the endocrine chain.? I would point out here that in any mental hospital there are to be found cases which require only the history of breakdown associated with childbirth to give them the diagnosis of Puerperal Insanity. That is to say that the type of insanity found in Puerperal cases is the same as that which is known as Acute Confusional Insanity. The logical line of treatment therefore should be the same in both types.

The conception, development, and expulsion of the foetus throws a great strain on the physique of a woman. How does this strain apply to the ovary.? We are told that the corpus luteum of pregnancy rapidly enlarges, comes to its full development at about the end of the third month or fourth month, and then disappears so very slowly that it is quite recognisable even as late as the eighth week of the puerperium. It is a view now generally accepted that the corpus luteum is in reality an endocrine gland, one having functions in some way connected with ovulation and menstruation. The arguments which lead up to this conclusion I need not go into here but let me quote Marshall's Physiology of Reproduction pp 365 et seq. as reference.<sup>3</sup> At the same time I wish to point out that Miss Lane-Claypon has shown that the interstitial cells of the stroma undergo an increase in size during the period of gestation, but this increase is not so great as that of the luteal cells. Consequently she suggests that these cells also may produce a secretion during pregnancy of the nature postulated for the cells of the corpus luteum. Ref. 4.

Now comes the question. Why is it that at a varying time in the history of a pregnancy, but usually within 5 to 10 days after labour, the patient, who up till this time was well and was standing the strain of the childbirth, why is it that there occurs this relatively acute breakdown.?

*What about an  
organismal toxæmia?*

At first sight it would appear that a powerful poison or toxin was at work. The breakdown is so acute, involving every function of the mind, and physically the effects of the breakdown are so widespread, that one is inclined to decide against the toxin theory. One would expect at least a certain specific action from a toxin, if by analogy from other toxins we may compare their effects.

Another explanation occurs to the mind.

It is that it might be due to a superfluity in the body of this supposed hormone consequent on the expulsion of the foetus and therefore only one body to serve instead of two. This is at least practical because a large proportion of breakdowns occur at the very time when a lack of proper adjustment of endocrine balance would show itself, i.e. a few days after delivery.<sup>3</sup> Is there any evidence to back it up? The effects noted in my series of cases would rather oppose this theory.<sup>3</sup> There it would appear that the injection of this extract supplied a deficiency. The hypothesis that the condition is due to an endocrine breakdown starting in the ovary, fits the facts, because enough is known about endocrine glands for us to understand when one goes, the effect is seen on the others as well.<sup>1</sup> They are all correlated, either as allies or as antagonists.<sup>3</sup>

From an anatomical point of view there is no evidence that the corpus luteum suddenly undergoes an atrophy in the case which breaks down into insanity. There is, so far as I can find, no direct evidence on this point. Nor indeed is there any evidence to show that there is any microscopical change of note in the ovary preceding this breakdown. It may be that there is such a change and indeed if the ovary is responsible theoretically there must be some change. The only fact I can quote which bears upon this point is that Sir Frederick Mott has found definite change in the ovaries of dementia praecox. I have not personally had the opportunity of examining the ovary from a fatal case of puerperal insanity.

Ref. 5.

## NOTE

## on PROPHYLAXIS.

None of the cases described above have a shorter history than nine weeks of mental symptoms, and so far I have been unable to try out the ovarian treatment on a case where the breakdown has just begun.<sup>3</sup> I have my eye on two cases where there might be mental trouble, namely, Case A who is supposed to be pregnant again, and Mrs K, the sister of Case B, whose confinement is due in the beginning of April, and whose history would suggest a liability to mental symptoms.<sup>1</sup>

If my hypothesis is substantially correct, it ought to be possible to control mental breakdown when it is first noticed, by administering ovarian extract straight away in sufficient doses. I throw out the suggestion as a logical deduction from the effect of the drug in the other cases. If it did control the restlessness and the insomnia and if it eased the strain, then it would form an important weapon in the treatment of this class of case.<sup>2</sup> Of course there is the difficulty of knowing how much improvement is really due to its action. Control by means of another case is obviously impossible, and the only satisfactory proof would be the statistics over a long period of a large hospital where every case had been so treated. These compared with corresponding figures got previously would give some evidence.

To go still further, it would be interesting to observe the effect of ovarian medication on cases where there are mental symptoms during the pregnancy itself and where presumably there would be complete breakdown in the puerperium.<sup>2</sup> It is relevant to observe here the effect of corpus luteum on the intractable vomiting of pregnancy.

## NOTE

on case of Dunbar Hooper's given in the Australian Medical Journal. 1913, ii 1297.

This case has some slight bearing on the subject.<sup>1</sup> The patient was a young woman who suffered from mental symptoms chiefly of a melancholic nature. She spent some four years in and out of different mental hospitals and finally came under the care of the author of the above article.<sup>2</sup>

There was no history of gestation in this case and therefore there is no question of the case not being a case of puerperal insanity. But Dr Hooper transplanted a healthy ovary into her abdominal tissues, and there was great improvement. Within six months there was complete recovery and the patient returned home quite well. Where previously there had been an absolute stoppage of menstruation associated with the mental symptoms, now there was normal menstruation and complete mental clarity.<sup>3</sup> At the operation the ovaries were examined, and were found to be both very small, hard, pale and cirrhotic. She had previously been given ovarian tabloids and thyroid extract.<sup>4</sup>

The above case is very interesting. How much of her condition was of a purely psychical nature I would not be prepared to say. But it is probable that this woman who was unmarried, was suffering from a very strong "castration complex". Whenever the menstruation returned the mental hebetude disappeared.

It is a moot point whether the transplantation of the ovary is necessary in order to obtain the full effect of its secretion. From comparison with other endocrine glands it should be possible to obtain the same effect by giving the extract and provided that this is done in sufficient dosage the end result will be the same.



## NOTE on the RELATIONSHIP of

## BASAL METABOLISM

## to PUERPERAL INSANITY.

IT was an observation of mine that one of the principal effects of the extract of the ovary was a great change in the general appearance and muscular tone of the patient. The change was remarkable in Case A and E but it was unmistakable in all. Colour returned to a pallid countenance, tone came back to the muscles, the skin and hair resumed a normal growth, and the tissues assumed that appearance which is associated with a healthy vasomotor system.

Now some of these cases showed an appearance not unlike that of exophthalmic goitre. The flushed face nor the eye phenomena were not present but the uncontrollable restlessness, the loss of weight, and the disordered vasomotor system all formed a picture which suggested an inter-relation between the condition and the action of the thyroid gland. Cases B and C suggested that a hypofunction of the gland was present while the others suggested a hyperfunction.

This, to my mind, opens up a very profitable line of research, namely, the basal metabolism of the insanities associated with childbirth, and the effect of ovarian substance on the basal metabolism. A series of observations got by estimating chemically the amount of CO<sub>2</sub> and O in a ten-minute volume of respired air taken before starting the treatment and continued weekly all through, would give us some exceedingly interesting information, and would throw light probably on the relationship of the thyroid to the ovary.

From the appearance of the cases before and after recovery I am certain that definite readings of their basal metabolism would show a variation from normal. It may be that the process could be detected in this way before the actual mental breakdown, in which case it could be used as a method of anticipating trouble in cases which have a bad family history.



Insanity allied to puerperal insanity in  
the lower Species.

On inquiry amongst farmer friends I am told that mental breakdown in domestic animals is not entirely unknown. The sow, for example, is liable to become restless, excited and furious during and after giving birth to a litter. She will rush about her sty or shed quite without purpose, and she will refuse food. She will devour her offspring, or trample them down, or refuse to allow them to suckle her. She may become dangerous to her attendant and come with intent to bite. This generally clears up quickly within three days but if there is a case where it lasts longer the animal is disposed of.

A state of things not unlike that was described to me with regard to the sheep. After the lamb is dropped the mother will rush away over the hillside and leave the lamb to its own resources. She will refuse to suckle it or have anything to do with it.

The cow was said to be comparatively free of such symptoms.

I have no information with regard to the apes. Nor can I obtain evidence concerning the incidence of puerperal insanity in the lower civilized races. I think it would be much rarer in uncivilized races.

## NOTE

on the Method of using Combinations of Endocrine Secretion in the hope that a Deficiency will be Supplied.

THERE ARE on the market many composite preparations containing a plurality of specific endocrine secretions. They are made and administered in the hope that by their use the defective link in the endocrine system can be repaired. Their use is often purely empirical and their value doubtful.

Scientifically the use of such products is to be deprecated inasmuch as their use postulates an inability to lay the responsibility of the clinical condition at the proper quarter. I would submit that this method of giving endocrines is not logical. Here we have a system of glands in the body, so far as we know possessing certain functions closely interrelated with each other. Now if we have a clinical picture which we believe to be the result of a derangement of these glands surely it lies upon us to find out accurately which is at fault. The method of mixing the secretions in order that one of them might hit the mark is one which will never lead to any accurate knowledge.

Mathematically we may express the situation as follows.

A B C D maintains a balance with W X Y Z.

A breakdown occurs in X, and clinical symptoms appear. The equation now is

A B C D . . . . . W x Y Z plus clinical symptoms.

The rational method of treatment would be to convert the small x into the large and normal X. This would be done by administering enough of the secretion to make up the imbalance, and the equation returns to

A B C D . . . . . W X Y Z.

Now surely it is not rational to make up the balance in X and at the same time disturb the balance in another way, by giving a composite substance say xyz. The equation would then be

A B C D plus clinical symptoms . . . . . W X YyZz.

It is established that certain specific endocrines have definite specific actions. For example the thyreoid secretion gives a definite clinical picture either in hypo- or in hyper-secretion. And more, the administration of thyreoid to a healthy person will produce symptoms of hyper-thyreoidism. I would submit that in the same way the other endocrine glands must produce their own distinct symptoms of hypo- or hyper- secretion, though what exactly they are we cannot yet define in every case.

I would then enter a plea for the single administration of an endocrine secretion. By that way at least we can secure more information about their relative value in treatment.

In the series of cases which have been given above, one of the most striking things clinically was the way in which the general physical recovery ensued after the exhibition of the ovarian extract. The vasomotor system was specially noted in this connection. I have no direct observations on the blood-pressure but from a condition of pallor, anaemia, and unhealthy dry skin, the patient regained a fresh colour and in one case became almost sunburnt, while the skin on the extensor aspects lost its smooth, glistening appearance and the hairs became healthy in growth.

From these things I would conclude that by the use of ovarian therapy remote glands were stimulated, namely, the thyreoid, probably the adrenals, in addition to the ovary itself. That the ovary itself was stimulated is shown by the onset of menstruation. I have dealt with this point elsewhere in this thesis.

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## R E F E R E N C E S .

AN enormous amount of literature is available on the physiology, pharmacology, and therapeutics of the extract of the ovary and corpus luteum. Many writers have dealt with action and function of the ovary from a purely scientific point of view, while others have recorded results obtained clinically in conditions associated with menstruation and the menopause. I have been unable to find any literature dealing with the action of ovarian extract in puerperal insanity. I therefore cannot quote other cases than my own.

I wrote Messrs Parke Davis asking them if they were aware of this use of their product. They replied that they were quite unaware of it and were good enough to forward a large supply of the preparation for the advancement of my work.

The following textbooks and authorities were consulted on the subject:-

|                   |                                       |
|-------------------|---------------------------------------|
| Johnstone.        | Manual of Midwifery.                  |
| Cole.             | Mental Diseases.                      |
| Stoddart.         | Textbook on Insanity.                 |
| Defendorf.        | Clinical Psychiatry.                  |
| White & Jelliffe. | Nervous and Mental Diseases.          |
| Clouston.         | Clinical Lectures on Mental Diseases. |
| Kraepelin.        | Manual of Mental Diseases.            |

In treating the subject from the general endocrine point of view the following works were consulted:-

|                 |                                       |
|-----------------|---------------------------------------|
| Schafer.        | Endocrine Organs.                     |
| Appleton.(Pub.) | Endocrinology and Metabolism. Vol. 2. |
| Harrower.       | Practical Hormone Therapy.            |
| Parke Davis.    | Gland Therapy.                        |
| Marshall.       | Physiology of Reproduction.           |

- (1). See list of manuals given above.
- (2). Parke Davis. Gland Therapy. 1923 Ed. p. 39.
- (3). Fraenkel. Quoted from Marshall. Physiology of Reproduction. 2nd Ed. p. 368.
- (4). Lane-Claypon. ibidem. p. 376.
- (5). Mott. Report on Dementia Praecox. 1922.
- (6). Dunbar Hooper. Australian Medical Journal. 1913. ii  
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## SUMMARY.

- (1). Puerperal Insanity in cases of the pauper class can be successfully treated by the administration in sufficient dosage of a reliable extract of the ovary.
- (2). Mental breakdown in childbirth is to be looked upon more as an endocrine breakdown, and the condition is due to a deficiency in the internal secretion of the ovary, and probably the secretion of the corpus luteum.

